Public Health Assessment for

KANEY TRANSPORTATION
ROCKFORD, WINNEBAGO COUNTY, ILLINOIS
CERCLIS NO. ILD064006901
AUGUST 11, 1998

SEPTEMBER 27, 1998

PUBLIC HEALTH ASSESSMENT

KANEY TRANSPORTATION

ROCKFORD, WINNEBAGO COUNTY, ILLINOIS

CERCLIS NO. ILD064006901

Prepared by:

Illinois Department of Public Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY

Kaney Transportation, Inc. (KTI) is a 5.4 acre site in a small industrial and residential area about 1.5 miles west of Rockford, Illinois. KTI operations consist of the transportation of petroleum and resinous substances, truck maintenance, and storage of some products at the site. Past operations have contaminated the soil and groundwater in the area. KTI may not be the only source of groundwater contamination in the area, as other petroleum facilities near KTI may have also contributed to the problem.

KTI currently poses no apparent public health hazard. Former sources of contamination have been removed and nearby residences have been demolished. In the future, activities at KTI and nearby petroleum facilities could lead to further soil and groundwater contamination. Considering there is a continuous, non-confined aquifer in the area, there is the danger of further surficial and deep groundwater contamination, the source of private and public wells in the area.

PURPOSE AND HEALTH ISSUES

The Illinois Environmental Protection Agency (IEPA) requested that the Illinois Department of Public Health (IDPH) review the historical and environmental data available to determine if a public health threat exists at the KTI facility. KTI operations consist of the transportation of petroleum and resinous substances, truck maintenance, and storage of some products at the site.

BACKGROUND

The site was placed on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on September 26, 1990, because of IEPA's concern about the potential contamination of soil, groundwater, and surface water [1]. The facility received its initial Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) evaluation in March 1991 when a Preliminary Assessment report was done. IEPA collected soil, sediment, and groundwater samples in November 1991 and later completed a CERCLA Screen Site Inspection (SSI) report. On August 30, 1994, IEPA decided that no enforcement action was necessary "at the present time" and closed the KTI compliance file [2].

KTI is a 5.4 acre site in a small industrial and residential area about 1.5 miles west of the city limits of Rockford, Winnebago County, Illinois (Attachment 1). Its main office is on Meridian Road and the shop, which is the object of this report, is on Cunningham Road. The site is bordered by Marathon Petroleum Company to the west; Cunningham Road, Torch Oil, and Badger Pipeline Company to the north; a residential area to the east; and Illinois Central Gulf Railroad line to the south (Attachment 2). Vacant land lies beyond the railroad tracks. An underground petroleum and propane pipeline runs north and south on the west side of the KTI property [3].

Before 1958, the property was used for agricultural purposes. Operations at KTI began between 1970 and 1971. From about January 1974 to March 1979, KTI specialized in the transportation

of a variety of liquids and gases, including gasoline, fuel oil, propane, resins, asphalt, varnishes, latexes and paints. During that time, both the interior and exterior of the trailer tanks were washed on the site. The waste water flowed from the floor drains through a pipe into a holding pond south of where the trucks were washed. According to the IEPA Division of Water Pollution Control files, KTI released about 300 gallons of waste water into the lagoon per week. The lagoon measured approximately 100 x 100 x 8 feet. When full, the waste was pumped into a tank truck and hauled to the Rockford Sanitary District (RSD) for proper disposal. In 1977, heavy metals and cyanide of an unknown source were detected in the effluent, and RSD prohibited KTI from disposing of effluent discharge from the on-site lagoon.

Heavy snow in the winters of 1976-1977 and 1978-1979 made access to the lagoon difficult. Occasionally the waste in the lagoon was observed overflowing into an adjacent corn field and to a stream about 150 feet east of the lagoon. The stream flowed several hundred feet where it reached a residential property and discharged into a private pond about 1,200 feet downstream. The liquid waste was reportedly oily with reddish, rusty coloring and giving off "unpleasant, sickening odors." A resident recounted oil scum on ducks and swans swimming in the pond. The pond was considered contaminated due to the odd tasting fish, several dead fish, and discoloration originating from the unnamed creek. Before the contamination, the pond had been used for fishing and boating.

In March 1979, KTI ceased the internal washing of its trailers as part of a settlement with IEPA. The conditions of the settlement included:

- the removal and proper disposal of all contaminated materials associated with the lagoon (solid wastes, liquid wastes, and sludge);
- the installation of a clay base of no less than 1 foot deep for the lagoon floor; and
- an impermeable industrial liner covering the clay base.

The waste was never to overflow the lagoon, but was to be properly disposed. In November 1981 two stainless steel holding tanks were placed in the lagoon area and used for the storage of external wash water. The lagoon was brought to grade by 1993.

In May 1985, a Resource Conservation and Recovery Act (RCRA) inspection revealed KTI was generating hazardous waste consisting of xylene used to clean their tank trailers. KTI's president agreed to ship the hazardous waste material to Acme Solvents. By June 1985, KTI had shipped 500 gallons of used xylene and claimed no longer to use xylene for cleaning.

In June 1989, KIT reported a solvent release on their property. During the investigation, about 40 whole drums, 30 drum fragments, and ten 5-gallon buckets containing solvents, resins, and caustic materials were discovered buried on the site. KTI believed that this material was buried 12 to 15 years ago. IEPA analysis of the drum contents and the contaminated soil showed the presence of several halogenated organic compounds. At IEPA's request, KTI expanded their investigation into both on-site soil and groundwater. The drums and the contaminated soil were removed to a depth of 14 feet below the grade as a voluntary cleanup under IEPA supervision.

In July 1989, three underground storage tanks (UST) were removed from the KTI property. These consisted of two 275-gallon tanks used for the storage of solvents on the east side of the dispatch building, and one 550-gallon tank used to store waste oil on the building's west side. The 2 solvent tanks were installed sometime in 1970 or 1971 and used until the mid to late 1970s in the process of washing road tar from the trailers. During the removal, they discovered that the two 275-gallon tanks were leaking solvent. Chlorinated solvents were detected in soil samples taken from the east and west excavations where the USTs had been. The tanks were transported to a facility for proper disposal, and visqueen was placed over both excavation holes. KTI brought the holes to grade using clean backfill in the east solvent contaminated area and using soil contaminated with waste oil in the west excavation area.

The history of the KTI site is intertwined with that of the nearby residences and other petroleum industries. Residents living near the site complained repeatedly about the pollution of their private wells. In 1981, IEPA received a complaint about a private well contamination from a resident living near the intersection of the Meridian and Cunningham Roads. Subsequent groundwater samples collected by the Winnebago County Health Department (WCHD) detected purgeable organic carbon and purgeable organic halides in the well water. In January 1986, IDPH and WCHD conducted additional sampling of the homes and industries in the area. Because of this sampling, WCHD advised residents of 4 homes to use alternative drinking water (Attachment 3). In February and March 1986, several meetings were conducted with IEPA, IDPH, WCHD, and the petroleum handling facilities near Cunningham and Meridian Roads to discuss the groundwater contamination. Several facilities (KTI, Torch, Clark, Badger, and Marathon) agreed to band together to supply the residents with bottled water.

In October 1989, a family wrote a letter to then President Bush complaining that KTI had not remediated the groundwater contamination. Subsequently, the Executive Office referred the matter to the U.S. Environmental Protection Agency (USEPA). USEPA formed a Technical Assistance Team that initiated an investigation in the area near the Cunningham and Meridian Roads. The contamination affected 6 residences and 8 commercial facilities, mainly petroleum facilities. This investigation, dubbed the "Falconer Well Study," began in February 1990 when water samples were collected directly from the well taps [4]. The study concluded that an actual or potential human exposure to hazardous contaminants in drinking water existed. Based upon the results, IEPA requested that KTI provide whole-house filtration systems to the homes receiving bottled water. KTI committed to the installation of either whole-house filtration or deep wells for the houses with contaminated wells.

In the spring of 1990, at the request of KTI, Mittelhauser Corporation conducted a study to find the extent of contamination for the KTI property [5]. The investigation included the sampling of soil and shallow groundwater monitoring wells. Mittelhauser also sampled the water well at the house east of the facility.

In October 1991 a potentially responsible party (PRP) group, which included KTI, began the installation of new private wells into St. Peter Sandstone in an attempt to provide safe drinking water to the residents with contaminated wells. However, after successfully installing one well,

the subsequent attempts failed. Sampling results showed much higher levels of volatile organic compounds (VOCs) in the new well than in the shallow well at this location. The PRP group gave up the installation of new residential wells. They decided to buy and demolish the houses with contaminated wells.

In July 1994, USEPA and IDPH staff conducted an indoor air study in a nearby home to evaluate the potential exposure to contaminants in their private well [6]. Measurable quantities of several VOCs had been reported in water samples collected from their private well since 1986. The residents had been drinking bottled water, but a possible exposure to water pollutants existed by inhalation and skin contact during showers and other bathroom-related activities, and by long-term inhalation within the home.

By the late summer of 1994, the 3 houses with contaminated private wells were demolished (Attachment 3). In February 1995, IEPA collected water samples from wells about 15 feet deep on 5 private properties in the area [7].

On May 4, 1996, two unrelated gas spills occurred in the area [8]. Approximately 38,000 gallons of gasoline overflowed out of a large tank at the Clark Oil Refining storage station at Cunningham and Meridian roads, and 12 hours later, and 2 blocks away, 5,000 gallons of gasoline spilled at Badger Pipeline on Cunningham Road. The excess gasoline was contained on the property in a clay drainage dike area, and later, a private contractor vacuumed it. Oil spills in the area were also noted in the past. Before 1971, an employee of "Arco," an oil company at the site where Clark Oil stands today, witnessed many spills from fuel oil and gasoline on the grass. These spills reportedly were in the thousands of gallons, and the spill sank into the ground.

KTI property is approximately 815 feet above sea level. The surficial soils over much of the grassy areas consists of light brown silty loam. On about ⅓ of the site, soil had been covered with asphalt and aggregate fill. The soils consist of silty clays down to approximately 10 feet. However, not as much clay is found near the southern end of the facility because of erosion. Commonly, a moist sand layer is found next to the surficial soils. Silt is the primary ingredient from 10 feet to about 28 feet. For the next 6 feet the loam turns sandy and contains clay, silt, gravel, and cobbles.

There are 3 major aquifers in the area: 1) sand and gravel, 2) a series of dolomites and sandstones known as the Cambrian-Ordovician deep sandstone system, and 3) the Elmhurst-Mt. Simon system. Groundwater was encountered at approximately 25 to 30 feet below the ground surface beneath the facility property. The depth to the water table corresponds closely to the depth of the top of the sandy till. A saturated or moist upper sand zone is under much, but not all, of the site, and is about 10 feet in depth. Because this aquifer does not have a confining layer, it is considered a continuous aquifer. A June 1990 Mittelhauser Report stated that groundwater flows east-northeast, with a flow velocity of 234 feet per year. Regional well logs document drinking water wells using water at depths ranging from 34 to 308 feet.

Winnebago County derives all of its public water from groundwater sources. The nearest municipal well lies less than 2 miles away and serves the city of Rockford with a population of 140,000. Within a 4-mile radius from the site the distribution of the population is:

Distance in miles	0 - 1/4	1/4 - ½	½ - 1	1 - 2	2 - 3	3 - 4
Number of municipal wells	0	0	0	1	3	5
City of Rockford population	NA	NA	NA	4,118	12,354	20,590
Outside city boundaries population	22	25	282	891	1,192	1,018
Total	22	25	282	5,009	13,546	21,608

NA=not applicable

Private industries and residents near KTI that are outside the city boundaries use drinking water from private wells. The KTI facility on Cunningham Road uses drinking water from a deep well installed in 1991. The use of drinking water from the original well was discontinued due to contamination. There are 5 full time, on-site workers and about 6 truck drivers that are occasionally on the site. The nearest residential well is approximately 50 feet east of KTI.

The facility stands on undulating topography, outside the 500-year flood boundary, according to the National Flood Insurance Rate Map. The maximum relief, as measured from the upper northwest corner to the low-lying southeast corner, is approximately 20 feet. Much of this relief occurs near the south border of KTI where a narrow creek flows northeast along the facility property. The creek flows to a recreational pond about 1,200 feet east of the facility and Meridian Road. A small dam at the east end of the pond controls the flow out of the pond in a northeastward direction until it runs into North Fork Kent Creek. This creek flows south for approximately 260 yards, at which point it turns east and enters Levings Lake. After leaving Levings Lake, this water body feeds into Rock River near a fishery for important game fish species. No surface water intakes are within 15 miles downstream of the surface water route.

IDPH completed a site visit on November 19, 1997. A 7-foot high, chain-link fence runs along the western and northern perimeters of the facility (Attachment 4). The northern fence is topped with barbed wire and has a lockable gate. A wooden fence runs approximately 1/4 of the way from Cunningham Road along the eastern perimeter. It continues with a chain-link fence farther south and separates the site from a nearby house and farm facilities. A gully edges trees and bushes for the last 1/4 of the eastern site perimeter. The southern perimeter has no fence. The facility was well kept and clean. The structures on the site consist of a building and 4 above-ground storage tanks. The building has offices in the northern portion and the shop area in the southern part. Storage tanks stand upright in the middle of the property. Sheltered pumps for gas delivery are on the west side of the tanks. An estimated 1/3 of the site is covered with asphalt pavement. Trailer tanks are parked along the edges and the middle of the site. An

asphalt plaque of about 5 x 2 yards is in the middle of the southern 1/3 where the lagoon had been and is surrounded by grass. Nine monitoring wells exist on the site, one in the asphalt plaque.

DISCUSSION

IDPH compared the concentration of each chemical detected during sampling with appropriate comparison values used to select contaminants for further evaluation for carcinogenic and non-carcinogenic health endpoints. The levels of metals were compared with IEPA mean soil concentrations from urbanized areas expected to represent naturally occurring soil background in Illinois. Contaminants exceeding comparison values and those for which no comparison was available were selected for further evaluation for both non-cancerous and cancerous health effects. The selected contaminants, their concentrations on the site and off the site, and comparison values are presented in Table 2 and Table 3.

A detailed discussion of each of the comparison values used is found in Attachment 7. Exceeding a comparison value does not mean adverse health effects will occur upon exposure. The amount of the contaminant, the duration and route of exposure, and the health status and receptivity of exposed individuals are important factors in determining if negative health effects will occur.

The Mittelhauser Corporation study in the spring of 1990 included soil and groundwater sampling. Some VOCs were detected in soil in the UST areas, but all chemicals were found at levels well below the comparison values. Benzene, 1,2-dichloroethane, cis-1,2-dichloroethene, toluene, trichloroethene, and vinyl chloride were detected in many groundwater monitoring wells at levels above the comparison values but not exceeding the health protective guidelines. Benzene and vinyl chloride were also found in a residential well at concentrations that might cause a low increased risk of getting cancer over a lifetime exposure. The study concluded that the presence of VOCs in both upgradient and downgradient monitoring wells suggests that sources other than KTI are responsible for the aquifer contamination. Increased levels of xylene and ethylbenzene in the former eastern UST area suggest that contamination here originated from past facility storage operations. However, the reliability of the study is reduced by the fact that the specified detection limits for many chemicals were above the comparison values.

In November 1991, an IEPA inspection team collected 9 soil and sediment samples, and 6 groundwater samples (Attachment 5 & 6). The soil and sediment samples were collected on the site and near the site within areas of suspected contamination. The samples were collected from 0 to 2 feet depth. Table 1 gives the locations, depths, and physical appearances of individual samples. Because each sample represented a mixed sample, it was impossible to separate data on surface soil (less than or equal to 3" deep) from data on subsurface soil (more than 3" deep). Soil sample X103, collected west of Marathon Oil and north of the rail road, served as a background sample. Soil and sediment samples X101 and X104 were collected on the site, and X102, X106, X107, X108, and X109, were collected east of the site, in a residential area. Soil sample X105 was collected south of KTI.

Sediment samples for the unnamed creek (X106, X107) and residential pond (X108, X109) were collected instead of surface water samples. The groundwater samples included 4 from on-site monitoring wells and 2 from privately owned wells. Sample G203 was taken from a private well approximately 850 feet northwest of KTI and served as a background sample. Samples G101, G102, G104, and G109 were collected on the site, and G202 from a private well approximately 0.25 miles northeast of KTI, at the corner of Cunningham and Meridian Roads. During the CERCLA Screening Site Inspection, a photo-ionization detector was used to detect the presence of certain airborne contaminants. Except sample G102, no documented releases to the air were noted.

None of the contaminants detected in on-site and off-site soil and sediment samples were present at levels that might be harmful if people are exposed to them. Several VOCs were found in on-site monitoring wells at levels above the comparison values. Vinyl chloride was found at a concentration of 0.03 milligrams per liter (mg/L) in sample G101 collected from the eastern border of KTI property, next to a home. High levels of toluene (6.1 mg/L), naphthalene (1.2 mg/L), and 1-ethyl-3-methyl-benzene (23 mg/L) were detected in monitoring well G102 on the western site border, near the Marathon Oil Co. A petroleum-type product was floating atop the water level in monitoring well G102, and the photo-ionization reading for this well registered 300 units above the background. Metals such as aluminum and antimony were detected in all on-site monitoring wells, but not at levels above comparison values.

The Quality Assurance/Quality Control (QA/QC) plan, obtained from IEPA, states that field data and sampling quality during the site assessment were satisfactory. No analytical problems were noted in the QA/QC summary, except for calcium and magnesium in soil from the lagoon, and naphthalene, toluene, and trichloroethene in on-site monitoring wells. Calcium, magnesium, and toluene were estimated values. Naphthalene and trichloroethene were identified at a secondary dilution factor because their initial concentrations exceeded the calibration range.

The July 1994 indoor air samples showed that in the living room air, benzene was the only waterborne contaminant identified. Other chemicals detected may have been related to cigarette smoking. During shower use, there was a continuous build up of the waterborne contaminants in the shower stall air. These data parallel the contaminant levels detected in the pre-shower and post-shower breath of the resident. The pre-shower breath samples showed no detectable levels of the waterborne contaminants except benzene, but the post-shower breath contained benzene, 1,2-dichloroethane, cis-1,2-dichloroethylene, trichloroethylene, and vinyl chloride. The post-shower breath contaminants were due to the inhalation and skin exposure associated with the 10 minute shower.

One of the private wells sampled in February 1995 contained elevated levels of benzene, toluene, ethylbenzene, and xylene. However, except for toluene, the contaminants were detected at concentrations below the comparison values.

Adverse health effects may occur in exposed individuals when a contaminant reaches people through an exposure pathway. An exposure pathway consists of a source of contamination,

environmental media and transport mechanisms, a point of exposure, a route of exposure, and a receptor population. Exposure to a contaminant may have occurred in the past, may be occurring now, or may occur in the future. When all the five elements that link the contaminant source to an exposed population are known, a completed exposure pathway exists. When information on one or more of the five elements is missing, only a potential exposure pathway exists.

In the past, hazardous waste sources at KTI were the drum disposal area, underground storage tanks, contaminated soils, and the lagoon. Various amounts of petroleum products and VOCs were found at these locations. However, as part of the voluntary clean up in June 1989, the buried drums and underground storage tanks were removed, along with about 300 cubic yards of contaminated soils. The contaminated materials from the lagoon were also removed and properly disposed, and the lagoon floor was covered with a clay base and an impermeable industrial liner. Later, the lagoon was brought to grade. KTI also stopped using xylene to clean its trucks. All these activities managed to contain, reduce, and remove the past sources of hazardous waste. The 1991 soil and sediment sampling revealed that no contaminants remained in those media at levels above comparison values.

Still, some contaminants migrated to the groundwater and were detected in on-site monitoring wells at levels that might pose a health hazard if people were exposed to them. These contaminants were naphthalene, vinyl chloride, toluene, and 1-ethyl-3-methyl benzene. The 5 full-time workers at the site and about 6 transient truck drivers could have been exposed by drinking contaminated water. The KTI wells draw water from a continuous aquifer with no confining layers to hinder pollutant migration to shallow and deep groundwater.

Groundwater flows east-northeast, where a residential area exists. Both private and public water supplies might become contaminated. The annual assessment of the municipal wells has not revealed contamination of the public water supply, but toluene was found in private wells providing water to residents in nearby houses. These residents, estimated at about 15 people, might have been exposed in their homes by drinking contaminated water, by skin contact, and by inhalation of VOCs during washing and showering. This completed exposure pathway (Table 4) could have occurred in the past, before petroleum facilities in the area provided residents bottled water for drinking and the houses with contaminated water were demolished. No exposure pathways connected to the site currently exist. Still, activities at KTI and the nearby petroleum facilities might pose a health risk in the future if oils or related product spill and contaminate soils and groundwater.

IDPH used the maximum detected level of contaminants to estimate the exposure dose for on-site workers and truck drivers. This may result in an overestimate of the actual exposure. A worker drinking 1.5 liters of contaminated water daily, 5 days per week, for more than a year, may receive a dose of naphthalene, toluene, and vinyl chloride that could result in adverse health effects. The comparison of estimated exposure doses to health guidelines are shown in Table 5.

Scientists do not know if there are any harmful effects in humans to long-term exposure to high levels of 1-ethyl-3-methyl benzene [9]. Up to 1 year exposure to estimated doses of naphthalene may cause the destruction of red blood cells, anemia, nausea, vomiting, abdominal pain, diarrhea, and liver and kidney damage [10]. Low to moderate daily exposure to toluene can cause tiredness, confusion, weakness, drunken-type actions, memory loss, and loss of appetite. These effects are more likely to occur when inhalation is the primary route of exposure [11]. Exposure to the estimated dose of vinyl chloride by ingestion is not likely to cause noncancerous health effects. However, vinyl chloride is known to cause cancer in humans, and prolonged drinking of contaminated water may increase the risk of getting cancer in exposed individuals [12].

COMMUNITY HEALTH CONCERNS

In June 1993, staff from IEPA and IDPH sampled private wells at nearby homes and interviewed residents about the history of their well contamination. At the time, all residents were drinking bottled water provided by the petroleum facilities in the vicinity. Water from their private well was used for vegetable gardens and to tend horses and domestic animals. Residents raised the following health-related concerns. We have addressed each of the community concerns about health as follows:

1. Will people drinking contaminated water get sick? Is there any link between a resident getting cancer back in 1981 and chemicals in the drinking water?

Although some residents might have been exposed to naphthalene, toluene, and vinyl chloride by drinking contaminated water or inhaling these chemicals during showering, it is very unlikely that their exposure was high enough to cause harmful health effects. At the concentrations detected in private wells, a long-term exposure period would be necessary for harmful health effects to occur. There was no documented long-term exposure. Because no information was provided about the cancer patient from 1981, it is impossible to discuss any connection with the inhalation of vinyl chloride. Inhalation of high levels of vinyl chloride for a long time is known to cause cancer in humans, especially liver cancer. However, only experimental animal studies exist to relate cancer with ingesting vinyl chloride.

2. Will the use of contaminated water harm animals (pets, horses) and vegetable gardens?

It is unlikely that the detected levels of toluene, naphthalene, and vinyl chloride in well water will have a harmful effect on pets, horses, and cultivated vegetables. When watering gardens, a portion of naphthalene volatilizes to the atmosphere. The remaining naphthalene enters the soil and is rapidly degraded by reacting with the soil and by microbes in the soil. It is unlikely to enter the plants and the food chain. Vinyl chloride is rapidly removed from the water through volatilization into the air. It is also broken down in the soil, but to a lesser extent than naphthalene. It is not likely to accumulate into plants and the food chain. Toluene is also removed from the water by volatilization into the air, oxidation processes, and by microbial

action. Toluene has a tendency to concentrate in fatty tissues, but it does not accumulate in plants that contain no fat.

3. Kids swim and play in an area swimming pool. Will they be hurt if the pool is filled with contaminated water?

The levels of contaminants detected in the private wells in the past was unlikely to cause harmful health effects for the brief exposure children would have swimming and playing in the pool. At the present time, there is no private well water contamination detected.

Residents also raised several questions about property values and liability issues. These issues are beyond the focus of this public health assessment.

ATSDR CHILD HEALTH INITIATIVE

ATSDR and IDPH, through ATSDR's Child Health Initiative, recognize that the unique vulnerabilities of infants and children demand special emphasis in communities faced with the contamination of their environment. Children are at a greater risk than adults from certain kinds of exposure to hazardous substances emitted from waste sites. They are more likely exposed because they play outdoors and because they often bring food into contaminated areas. They are shorter than adults, which means they breath dust, soil, and heavy vapors close to the ground. Children are also smaller, resulting in higher doses of chemical exposure per body weight. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. Most importantly, children depend completely on adults for risk identification and management decisions, housing decisions, and access to medical care.

IDPH evaluated the likelihood for children living near the site to be exposed to contaminants at levels of health concerns. Children were likely exposed to chemical contaminants in the past, but there are currently no completed exposure pathways affecting children at the site. Should private wells still in use downgradient of the site be affected by contamination in the future, children in these houses may be exposed to the contaminated water.

CONCLUSIONS

Based on the information reviewed, IDPH concludes:

1. KTI poses no apparent public health hazard at the present time. Former hazardous sources of contaminants were removed. In the past, on-site workers and transient truck drivers could have been exposed to harmful levels of toluene, naphthalene, and vinyl chloride by drinking on-site contaminated water. Long-term exposure for at least 1 year could cause negative health effects such as anemia, digestive problems, tiredness and drunken-type actions, and slightly increase the risk of getting cancer.

2. KTI may not be the only source of past groundwater contamination in the area. Other petroleum facilities functioning in the immediate vicinity might contribute to the drinking water contamination in the nearby residences.

3. In the future, activities at KTI and nearby petroleum facilities might lead to soil and groundwater contamination. Considering there is a continuous, non-confined aquifer in the area, there is the danger of surficial and deep groundwater contamination, the source of private and public drinking water wells.

RECOMMENDATIONS

IDPH recommends:

1. Conduct periodic monitoring of area private wells to ensure that no exposure is occurring to hazardous substances at levels of public health concern.

2. Prevent migration of contaminants to soil and groundwater.

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REFERENCES

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5. Mittelhauser Corporation: "Extent of Contamination Study for Kaney Transportation, Inc. Rockford, Illinois". June 1990.

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8. Rockford Register Star: "Gas spills close, unrelated". Tuesday, May 7, 1996

9. Agency for Toxic Substances and Disease Registry (ATSDR): Toxicological Profile for Ethylbenzene" (Update). September 1997.

10. ATSDR: "Toxicological Profile for Naphthalene" (Update). August 1995.

11. ATSDR: "Toxicological Profile for Toluene" (Update). May 1994.

12. ATSDR: "Toxicological Profile for Vinyl Chloride" (Update). September 1997.

CERTIFICATION

This Kaney Transportation, Inc., Public Health Assessment was prepared by the Illinois Department of Public Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the public health assessment was begun.

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The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health assessment and concurs with its findings.

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Table 1. Soil Samples Description

Sample	Depth	Appearance	Location
X101	0 - 6"	Dark silty clay	West boundary of KTI
X102	1 - 4"	Black nondescript humous/topsoil	Southwest corner of a nearby house backyard
X103	0 - 6"	Brownish/ black topsoil	East of South Weldon Rd. North of R.R. tracks & west of barbed wire fence
X104	6" - 2'	Very sandy with clay; waste oil-like odor	Lagoon area
X105	0 - 4"	Brown clay with sand & gravel	3' north of gas pipe south of KTI's southern boundary
X106	0 - 4"	Brown silty clay with sand and some gravel	22'11"south of southern lagoon boundary; 75'9" east of east boundary fence of site
X107	0 - 2"	Clay with fine brown sand some pebbles	Southwest corner of Cunningham and Meridian Rd. West of culvert
X108	4 - 8"	Very black with organic matter	East end of the pond
X109	0 -2"	Black with organic matter	West end of the pond

Table 2. Soil and Sediment sampling of 11-07-91

Chemicals mg/kg (ppm)	Sampling Locations										Comparison Values mg/kg
	X 103 Background	X 101 On-site	X 104 On-site	X 105 Off-site	X 106 Off-site	X 107 Off-site	X 109 Off-site	X 108 Off-site	X 102 Off-site	Trip Blank	
Phenanthrene	--	—	—	--	—	1.40	--	0.78	--	--	0.14 (ATSDR)[1]
Crysene	—	—	--	—	—	0.95	--	--	--	--	0.64 (ATSDR)[1]
Benzo(a)pyrene	--	—	—	--	—	0.80	--	--	--	--	0.10 (CREG) 1.30 (ATSDR)[1]
Inorganics											
Aluminum	8,930	9,470	5,880	7,440	8,930	7,320	5,830	9,690	11,200	--	9,500 (IEPA)[2]
Antimony	--	--	--	--	--	--	99.50	--	--	--	20 (RMEG) 4 (IEPA)[2]
Calcium	--	--	23,400 J	--	--	--	--	--	--	--	9,300 (IEPA)[2] 2000 (RMEG)
Cobalt	--	13.80	9.90	24.40	11.90	18.80	13	--	--	--	8.9 (IEPA)[2]
Magnesium	--	--	13,800 J	--	--	--	--	--	--	--	4820 (IEPA)[2]
Sulfate	--	--	52.10	--	132	154	107	613	--	--	85.5 (IEPA)[2]

mg/kg = milligrams of contaminant per kilogram of soil = parts per million (ppm)
— The compound was analyzed for, but not detected
J = Indicates an estimated value
[1]Agency for Toxic Substances and Disease Registry: "Toxicological Profile for Polycyclic Aromatic Hydrocarbons"
[2]Illinois Environmental Protection Agency: "A Summary of Selected Background Conditions for Inorganics in Soil"
CREG = Cancer Risk Evaluation Guide
RMEG = Reference Dose Media Evaluation Guide

Table 3. Groundwater Samples Collected 11/06 and 11/07 1991

Chemicals mg/kg (ppm)	Sampling Point Locations							Comparison Values mg/L (ppm)
	G 203 Background	G 104 On-site	G 102 On-site	G 109 On-site	G 101 On-site	G 202 Off-site	Trip Blank	
Vinyl Chloride	--	--	--	--	0.03	--	--	0.0002 (EMEG) 0.002 (MCL)[1]
Trichloroethane	—	--	—	0.023	0.091 D	0.01	--	0.005 (MCL)[1]
Tetrachloroethane	--	—	—	--	0.018	--	--	0.005 (MCL)[1]
Toluene	--	--	6.1 J	--	--	--	—	0.20 (EMEG) 1 (MCL)[1]
Naphthalene	--	0.14 D	1.2	--	--	--	--	0.20 (EMEG)
1-Ethyl-3-Methyl-Benzene	--	--	23	--	--		--	0.70 (MCL)[1]
Inorganics								
Aluminum	--	14.20	30	12.30	14.90	--	--	0.05-0.20 (SMCL)[1]
Antimony	--	0.03	0.21	0.402	--	--	--	4 (RMEG) 0.006 (MCL)[1]
Manganese	--	3.32	4.52	1.95	1.040	0.963	--	0.05 (RMEG) 0.05 (SMCL)[1]
Nickel	--	0. 45	0.397	--	0.031	--	--	0.20 (RMEG) 0.10 (MCL)[1]
Vanadium	--	0.054	0.071	--	--	0.015	--	0.03 (EMEG)

mg/L = milligrams of contaminant per liter of water = parts per million = ppm
D = Indicates compound at a secondary dilution
J = Indicates an estimated value
-- The compound was analyzed for, but not detected
MCL = Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
EMEG = Environmental Media Evaluation Guide (ATSDR)
RMEG = Reference Dose Media Evaluation Guide (ATSDR)
[1]United States Environmental Protection Agency: " Drinking Water Regulations and Health Advisories". February 1996

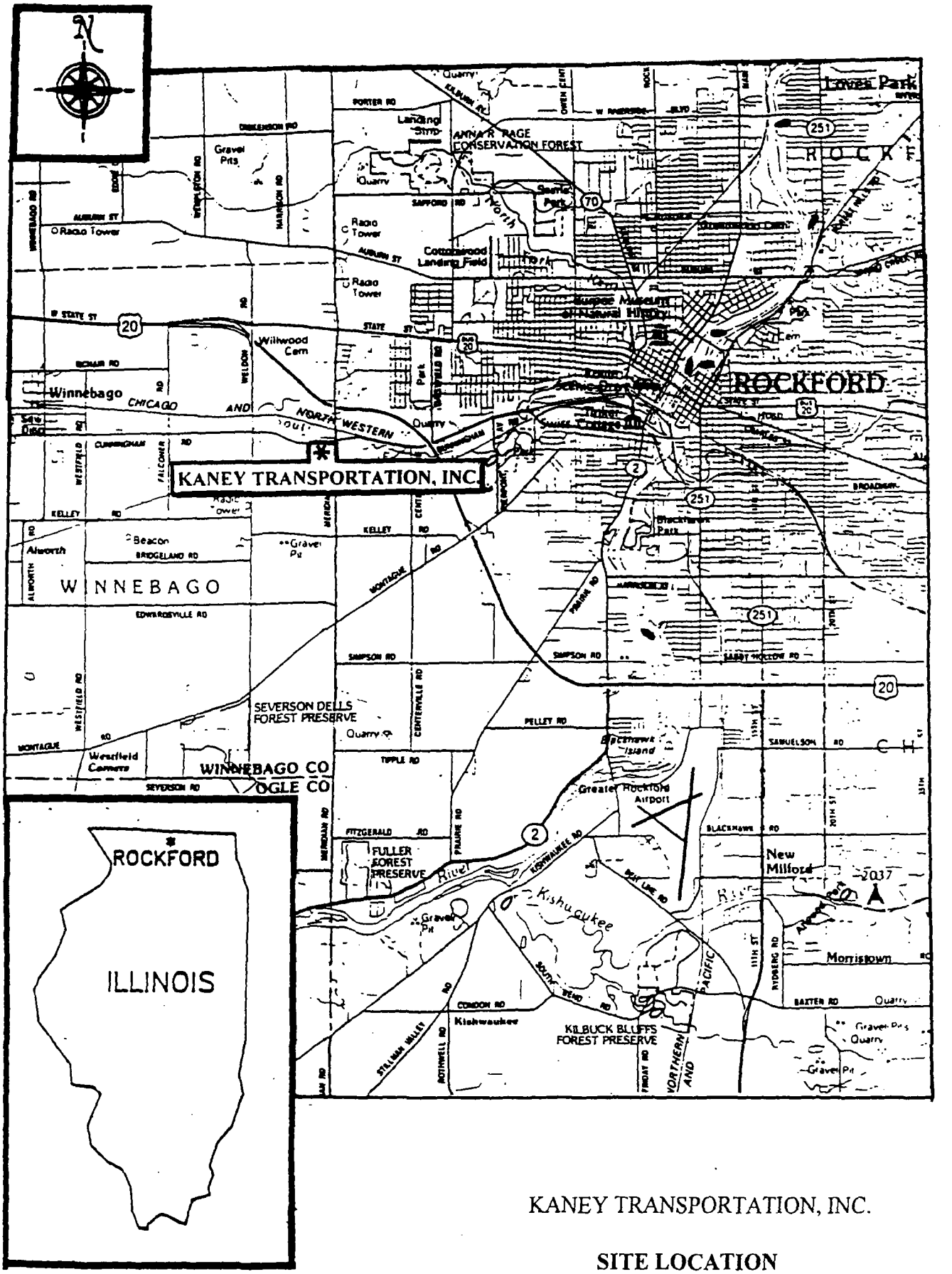
Table 4. Completed Exposure Pathways

Pathway Name	Exposure Pathway Elements					Time
	Source	Environmental Medium	Point of Exposure	Route of Exposure	Exposed Population	
Private wells (on-site)	KTI	Groundwater	Taps	Ingestion	On-site workers= 5 Transient truck drivers= 6	Past
Private wells (residential)	KTI	Groundwater	Residences	Ingestion Skin contact Inhalation	Estimated residents number= 15	Past

Table 5. Comparison of Estimated Exposed Dose* to Health Guidelines

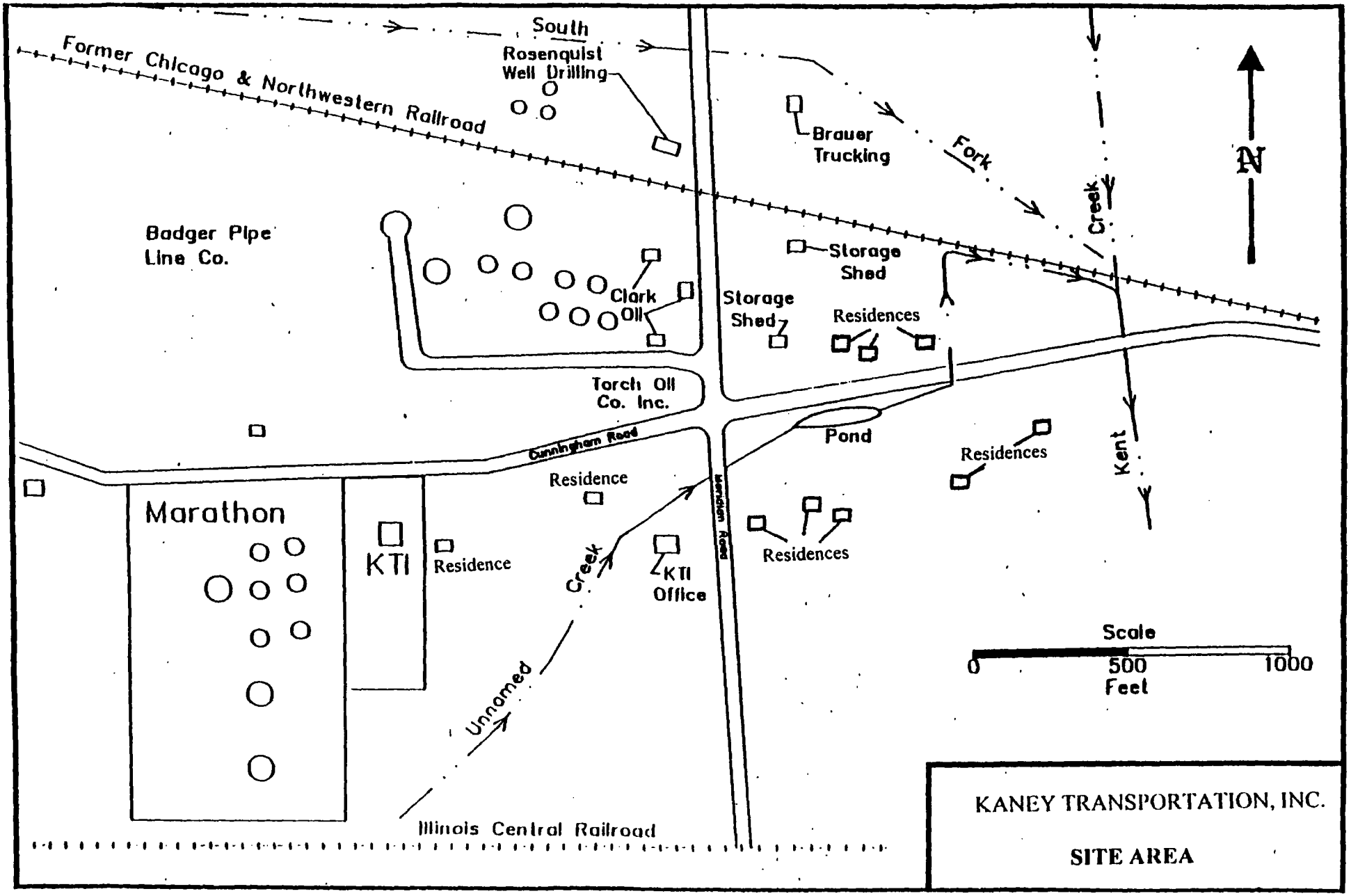
Contaminant	Exposure Pathway	Health Guidelines for Ingestion (mg/kg/day)[1]		
		Value	Source	Exceeded by Estimated Exposure Dose
1-ethyl-3-methyl benzene	Private Well (on-site)	0.1	Chronic oral RfD[2]	Yes
Naphthalene	Private Well (on-site)	0.02	Intermediate oral MRL[3]	Yes
Toluene	Private Well (on-site) Private Well (residence)	0.02	Intermediate oral MRL[3]	Yes
Vinyl Chloride	Private Well (on-site)	0.00002	Chronic oral MRL[3]	Yes

* The maximum detected contaminant concentration used to calculate the exposure dose
[1] mg/kg/day= milligrams of contaminant per kilogram of body weight per day
[2] Reference Dose (EPA)
[3] Minimal Risk Level (ATSDR)



KANEY TRANSPORTATION, INC.

SITE LOCATION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Brauer
Trucking
Fork
Creek
N
Badger Pipe
Line Co.
Clark
Oil
Storage
Shed
Storage
Shed
Residences
Torch Oil
Co. Inc.
Cunningham Road
Pond
Residences
Kent
Residence
Marathon
KTI
Residence
Creek
KTI
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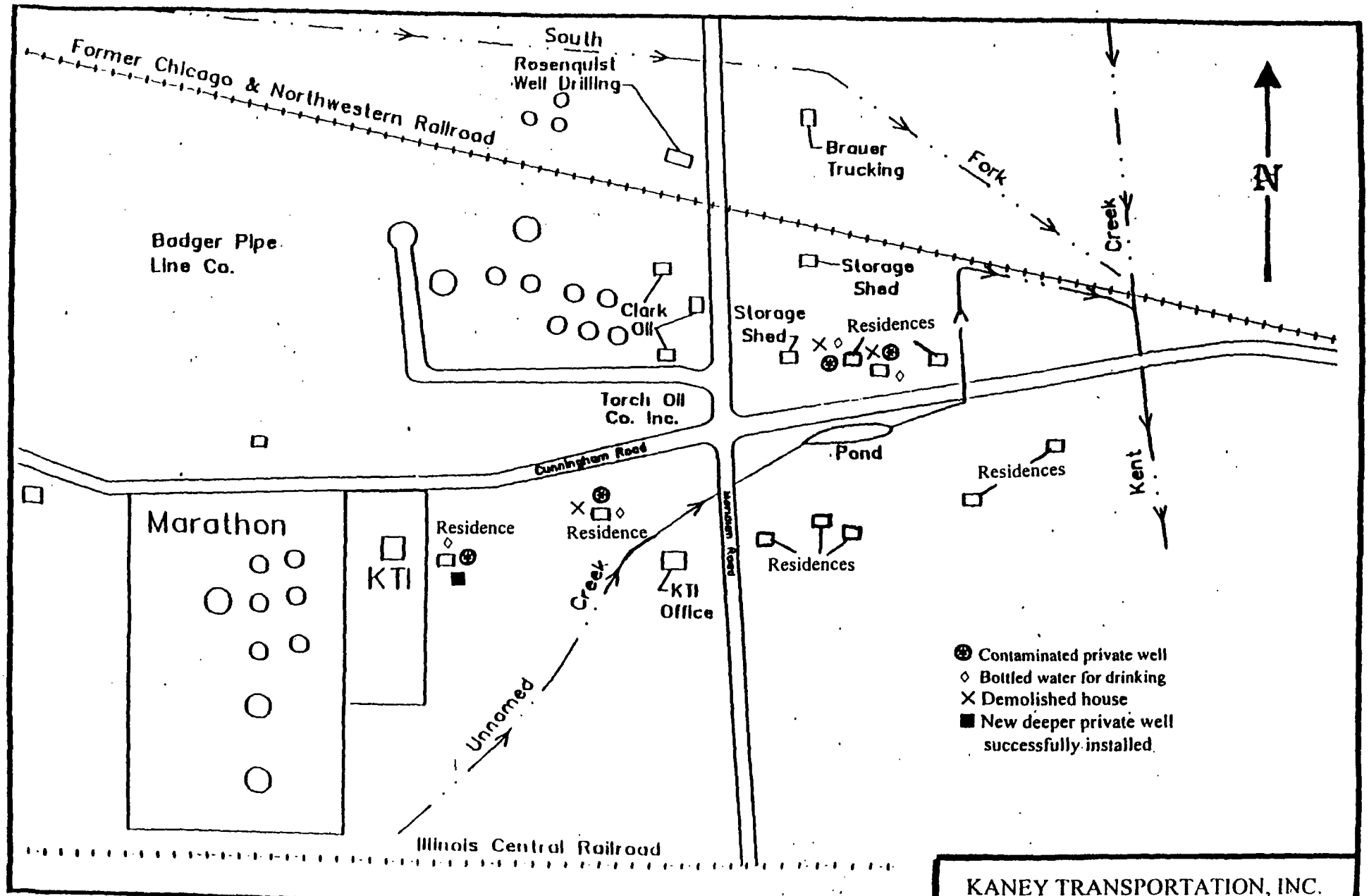
1000
Feet
Illinois Central Railroad
KANEY TRANSPORTATION, INC.
SITE AREA



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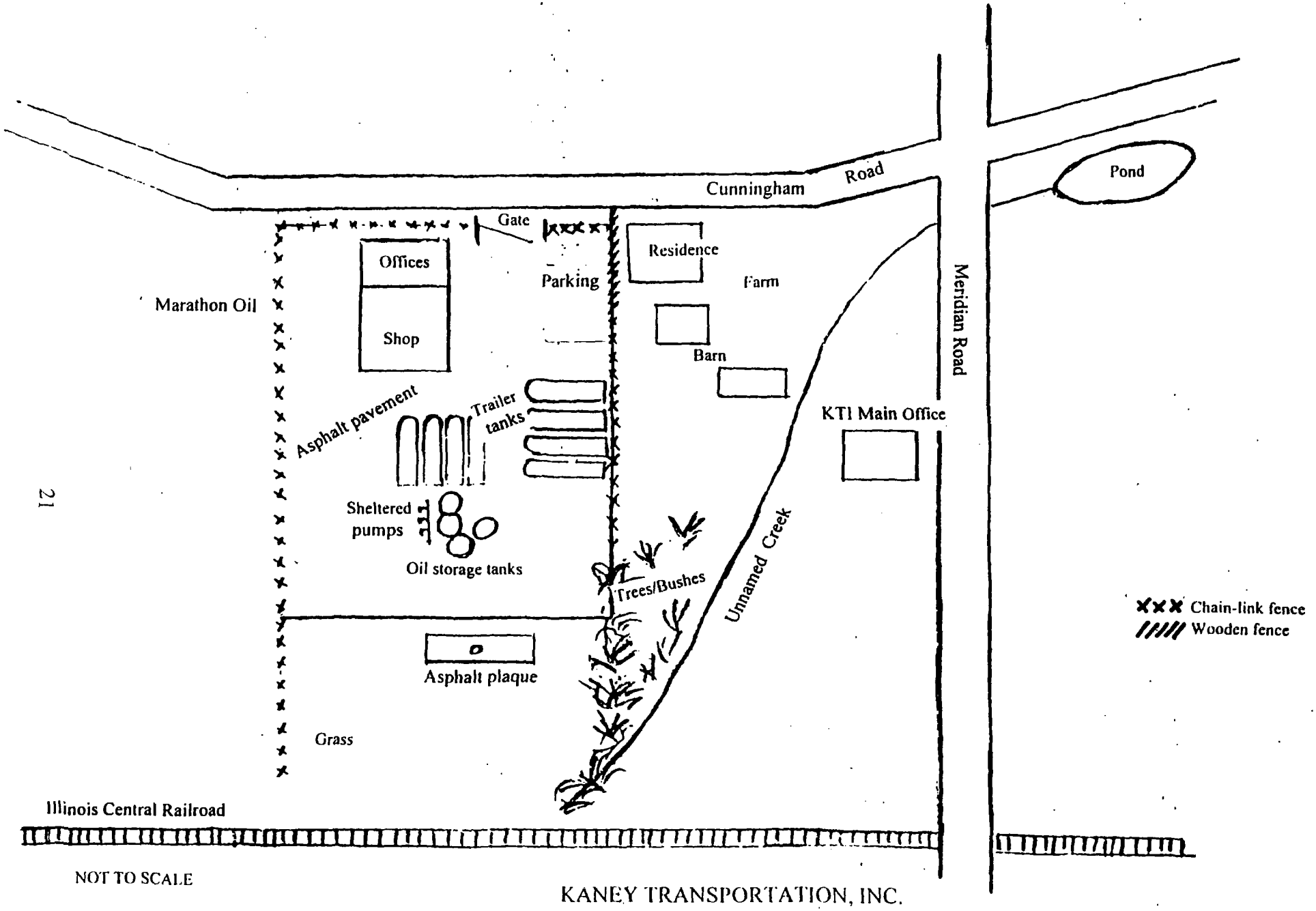
Houses with Contaminated Drinking Water Demolished by 1994



NOT TO SCALE

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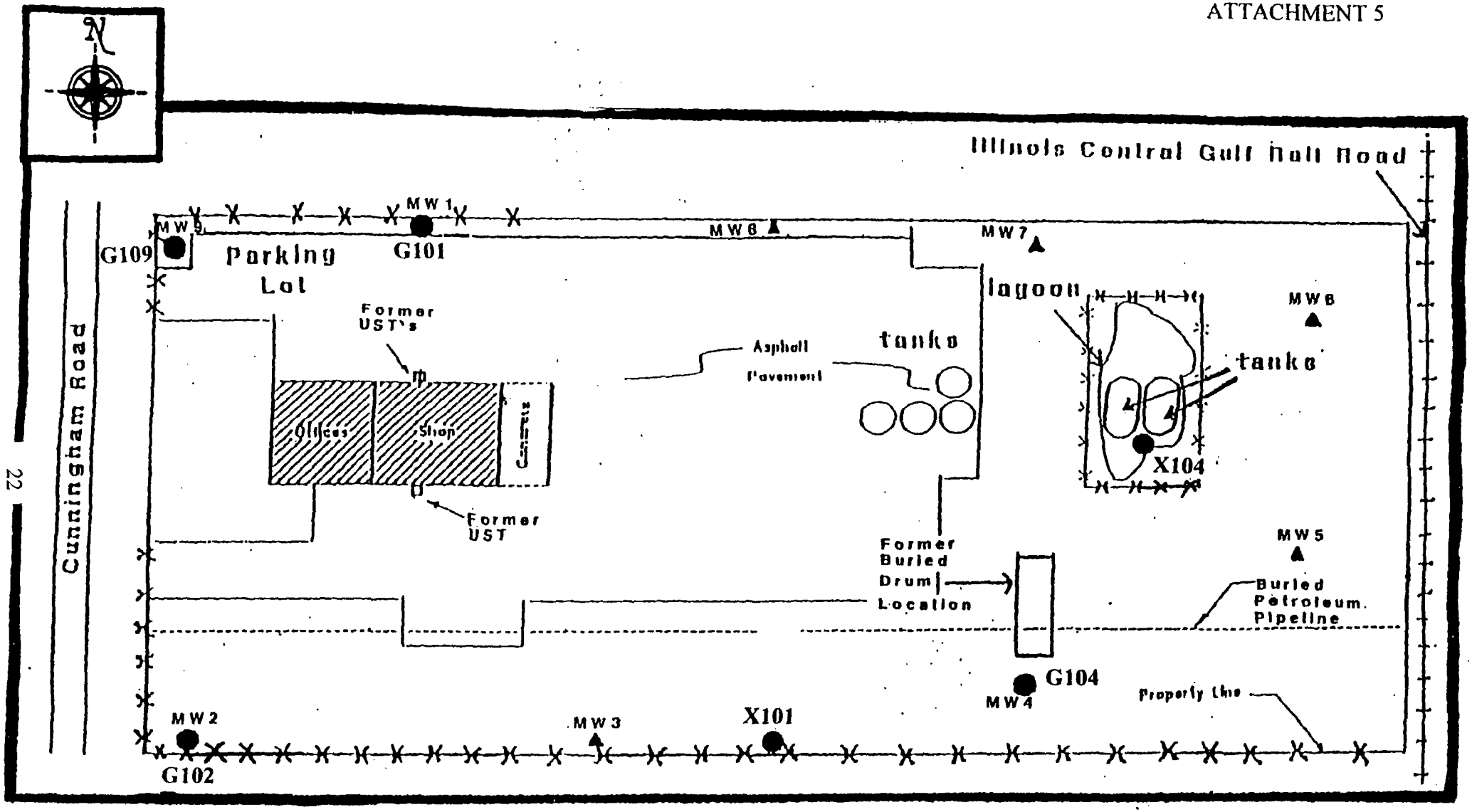
Diagram of IDPH Site Visit of November 19, 1997.

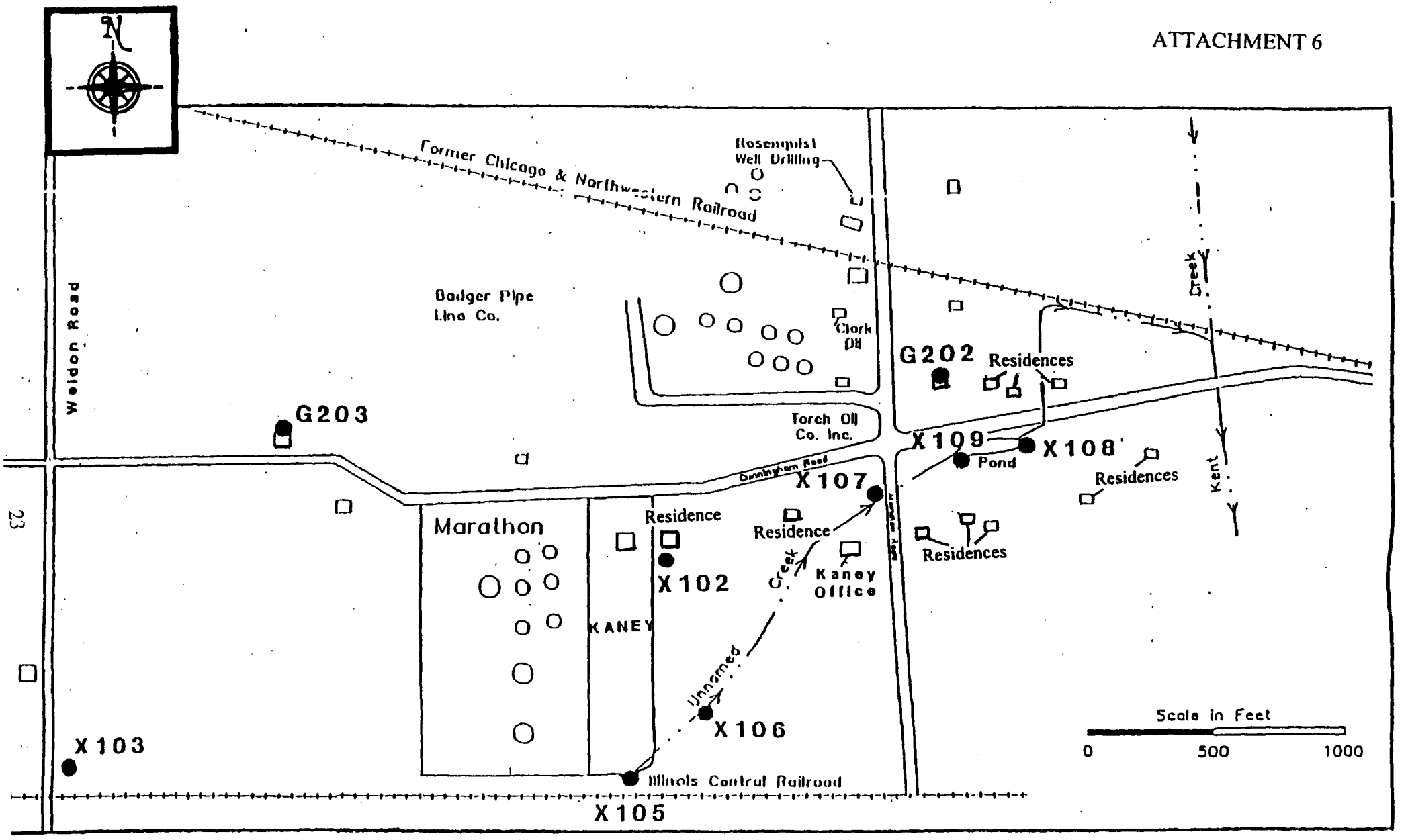


● **G000**= Groundwater sample
● **X000**= Soil and Sediment sample
▲ Existing monitoring well

KANEY TRANSPORTATION, INC.

On-site Samples Locations Collected November 1991.

ATTACHMENT 6



● **G000**= Groundwater sample
● **X000**= Soil and Sediment sample

KANEY TRANSPORTATION INC.

Off-site Samples Locations Collected November 1991.

ATTACHMENT 7

Comparison Values Used in Selecting Contaminants of Concern.

Reference Dose (RfD) is an estimate of a daily exposure to a chemical that is likely to be without an appreciable risk of harmful effects during a lifetime of exposure. It was developed by USEPA and is expressed in units of milligrams of contaminant per kilogram of body weight per day (mg/kg/day).

Minimal Risk Level (MRL) is an estimate of daily human exposure to a chemical that is likely to be without an appreciable risk of harmful non-carcinogenic effects over a specified duration of exposure. It does not protect hypersensitive individuals. MRLs were developed by ATSDR and are expressed in mg/kg/day.

Cancer Risk Evaluation Guides (CREGs) are estimated contaminant concentrations based on one excess cancer in a million individuals exposed to a chemical over a lifetime (70 years). These are very conservative values designed to protect sensitive members of the population.

Reference Dose Media Evaluation Guides (RMEGs) are estimates of a daily oral exposure to a chemical that is unlikely to produce any non-cancerous adverse health effects over a lifetime. They are based on USEPA reference doses (RfDs) and are conservative values designed to protect sensitive members of the population.

Environmental Media Evaluation Guides (EMEGs) are comparison values developed by ATSDR for chemicals that are relatively toxic, frequently encountered at National Priority List (NPL) sites, and present a potential for human exposure. They are derived to protect the most sensitive members of the population (e.g., children), and are not cut-off levels, but rather comparison values. They do not consider carcinogenic effects, chemical interaction, multiple route of exposure, or other media-specific routes of exposure. They are very conservative concentration values designed to protect the public.

Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water which is delivered to any user of a public water supply that is protective of adverse human health effects.

Secondary Maximum Contaminant Level (SMCL) is the maximum permissible level of a contaminant in drinking water that do not affect aesthetic qualities of the water such as odor, taste, and color, and are related to public acceptance. These levels are not federally enforced.